

STATEMENT OF CONSIDERATIONS

Request by Air Products and Chemicals, Inc. for Waiver of Domestic and Foreign Patent Rights to inventions that may arise under Contract No. DE-FC04-93AL94461 between the United States Department of Energy (DOE) and Air Products and Chemicals, Inc. DOE Docket: W(A)93-039.

The Petitioner, Air Products and Chemicals, Inc., (Air Products) has requested a waiver of all domestic and foreign patent rights to inventions which it may conceive or reduce to practice in the course of work under Contract No. DE-FC04-93AL94461 a Cooperative Agreement with DOE.

The contract covers a four phase development program for a recently patented technology developed at Air Products entitled "Novel Selective Surface Flow (SSFTM) Membranes for the Recovery of Hydrogen and Carbon Monoxide from Waste Gas Streams." According to the requester, the distinctive feature of this application is the development of a unique and scaleable new type of gas separation membrane that can potentially achieve an economically efficient separation of hydrogen from low-pressure, high-volume waste gas streams that was previously unrecoverable with conventional technology. The development program begins with the demonstration of a one square-foot SSFTM adsorbent membrane on a laboratory scale tubular or monolith support and concludes with design, construction and operation of a 100 square-foot membrane area in a mobile prototype test facility on an actual waste stream.

The initial projected total contract cost for the project was \$3,559,660. Air Products' projected share of the overall cost was \$1,780,526, or 50.02%. The remaining 49.98% (\$1,779,134) was to be provided by DOE under B&R Code ED3002. Copies of the relevant portions of the cooperative agreement showing projected costs and cost sharing percentages are attached.

The projected period of performance of the cooperative agreement was 47 months beginning April 1, 1993, and scheduled for completion February 28, 1997. The revised end date for the contract is May 31, 1997. Under the terms of the contract, DOE will not pay the cost of any equipment. An application for continuation of the contract has been received by DOE in which Air Products requests an additional \$270,046 from DOE in order to finish work under the cooperative agreement. According to the continuation application, for any additional moneys provided by DOE, Air Products would commit share costs according to the original contract percentages (50.02% for Air Products and 49.98% for DOE). To date, no additional funding pursuant to Air Products' request has been approved. In the event that a continuation or modification is approved by DOE, this waiver will be limited to inventions generated as a result of work done which falls within the scope of work originally proposed and reflected in the attached

Petition for Advance Waiver of Patent Rights (submitted to DOE by Air Products with correspondence dated August 3, 1993).

The requester represents that none of the work to be performed under the contract would have use in the production or utilization of special nuclear material or atomic energy.

Air Products is a major international supplier of industrial gases and related equipment, chemicals and environmental and energy systems. Through subsidiaries and a growing number of international joint ventures, Air Products has operations in 24 countries and maintains over 200 plants and facilities worldwide. Air Products' commercial track record, based on representations contained in its present Request for Advanced Waiver of Patent Rights, is favorable, showing numerous successes in producing and marketing large volumes of industrial gases to domestic and foreign buyers both in the public and private sectors. Since the early 1970's, Air Products has gained experience in developing novel non-cryogenic gas separation technologies in the areas of adsorption and membrane systems.

According to the requester, over the past ten years, Air Products has invested approximately \$50 million in research, process development and commercialization of gas separation membranes, and membrane research and development is the single largest program funded by the company. As a result, Air Products possesses extensive state-of-the-art laboratory facilities for development of new polymeric membrane facilities which will be available for use in connection with work under the cooperative agreement mentioned above. In addition, to the cost-share described above, Air Products will dedicate a research laboratory and two laboratory-scale membrane test units to promote development of the work under the cooperative agreement. Also, in connection with the contract, Air Products will use an on-line gas chromatography system and a specially-constructed plate-and-frame membrane module capable of holding six SSF carbon membrane sheets for continuous testing and process performance evaluation.

According to Air Products, it is not aware of any governmental regulations which require the use of the contract subject matter by the general public or a segment thereof.

The requester represents that public health, safety and welfare may be positively affected by the work under the cooperative agreement as Air Products will attempt to remove hydrogen from waste streams of hydrocarbons, thus reducing formation of NO_x, which responsible for depletion of the atmospheric ozone layer.

According to the requester, a grant of the requested waiver will reinforce Air Products' commitment to promote the development and commercialization of any invention which may be made under this cooperative agreement. Air Products states further that if future patents were made available on a license-free basis to competitors or users, the ability of Air Products to

commercialize the process would be impeded and would cause company management to question commitment of Air Products resources to continued commercialization.

A U.S. Competitiveness provision similar to that used in Cooperative Research and Development Agreements (CRADAs) shall apply to this advance waiver. A copy of correspondence dated 20 March, 1995, from Air Products' Patent Attorney Keith Gourley, containing (on page 2 of the letter) the applicable wording proposed by Air Products and agreed to by DOE is attached. Also attached is a copy of a letter signed by Keith Gourley stating Air Products' agreement that licensees and assignees will be bound by the same U.S. Competitiveness provision.

It is concluded based on the foregoing, that Air Products is well qualified to commercialize any invention that may arise under the Cooperative Agreement. It is believed that the grant of the requested waiver according to the terms described herein will help to ensure that any new technology produced under the contract will be commercialized as early as possible. It is believed that Air Products has not only the technical and commercial ability to do so, but also sufficient financial interest, as demonstrated by its significant sharing of cost in the cooperative agreement and its business incentive to reap profits from commercialization of the technology.

Accordingly, in view of the foregoing, and upon evaluation of the Petition in view of the objectives and considerations set forth in 41 C.F.R. 9-9.109-6, all of which have been considered, it is recommended that the requested waiver be granted.



Russell D. Ellic
Patent Attorney

Date 8/8/95

Based on the foregoing Statement of Considerations and the representations made in the attached waiver petition it is determined that the interest of the United States and the general public will be best served by a grant of the requested waiver, and therefore the waiver is hereby granted. The waiver does not apply to any modification or extension of the agreement other than those described in the Statement, when through modification or extension, the purpose, scope, or funds applied to the Agreement become substantially altered.

CONCURRENCE:

[REDACTED]

Charles Russomanno, Program Manager
Office of Industrial Technology
EE-222, DOE HQ

4/17/96

Date

APPROVAL:

[REDACTED]

Paul A. Gottlieb, Assistant General Counsel for Technology Transfer
and Intellectual Property, GC-62, HQ

4-18-96

Date

ARTICLE: X: U.S. COMPETITIVENESS


The Parties agree that a purpose of this DOE Cooperative Agreement is to provide substantial benefits to the U.S. economy.

In exchange for the benefits received under this DOE Cooperative Agreement, the Parties therefore agree to the following:

- A. Products embodying Intellectual Property developed under this DOE Cooperative Agreement shall be substantially manufactured in the United States.
- B. Processes, services, and improvements thereof which are covered by Intellectual Property developed under this Cooperative Agreement shall be incorporated into the Contractor's manufacturing facilities in the United States either prior to or simultaneously with implementation outside the United States. Such processes, services, or improvements, when implemented outside the U.S., shall not result in reduction of the use of the same processes, services, or improvements in the United States.

This language has been acceptable to the DOE pertaining to CRADAs and is acceptable to Air Products. Kindly consider its acceptability for incorporation into our pending Petition for Advanced Patent Waiver. If such language is acceptable, feel free to incorporate such language into the Waiver and Air Products shall promptly accept such language. Otherwise, kindly contact me at your earliest convenience so that me may discuss mutually acceptable alternate language. As always, thank you for your assistance in this matter and feel free to contact me if you have any questions.

Very truly yours,


Keith D. Gourley
Patent Attorney
Telephone: (610) 481-6566
Telefax: (610) 481-7083

c: Sherri Lilienfeld
Madhu Anand